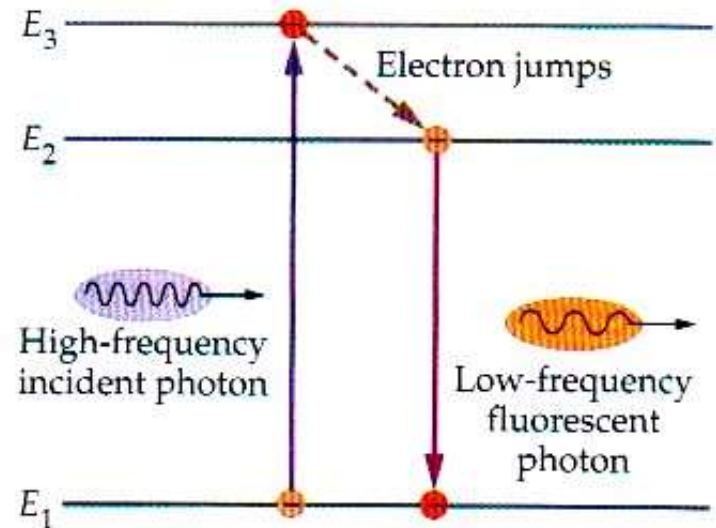


## Fl-las-1

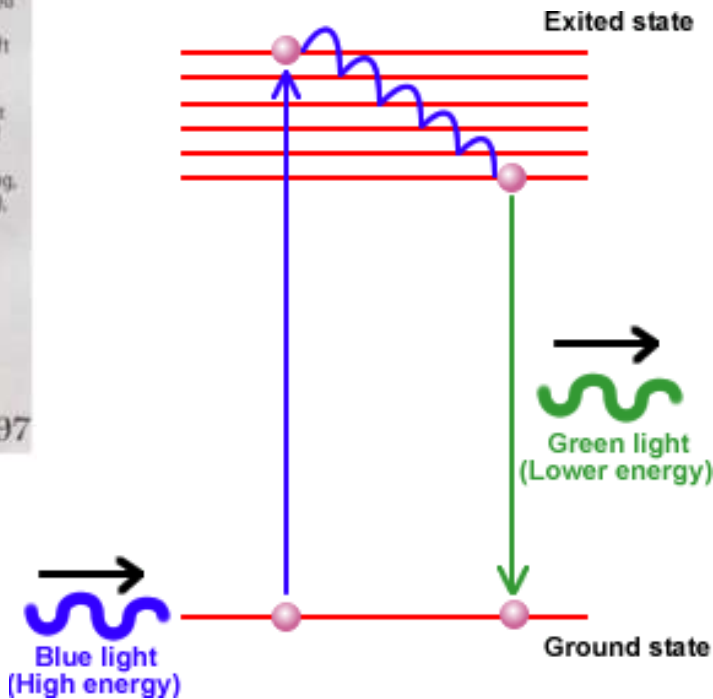


Skin cells from a patient with amyotrophic lateral sclerosis were reprogrammed to become stem cells that then differentiated into motor neurons, the cells afflicted in the disease. Gist Croft of Columbia University and Mackenzie Weygandt of Project ALS used an inverted fluorescent microscope to take snapshots of the motor neurons' 25-micron-wide nuclei (green) and their long, connecting fibers, or axons (red), to compare diseased cells with their healthy counterparts.

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## Fluorescence



quinine in tonic water



Fluorescence  
Violet 405 nm laser pointer source

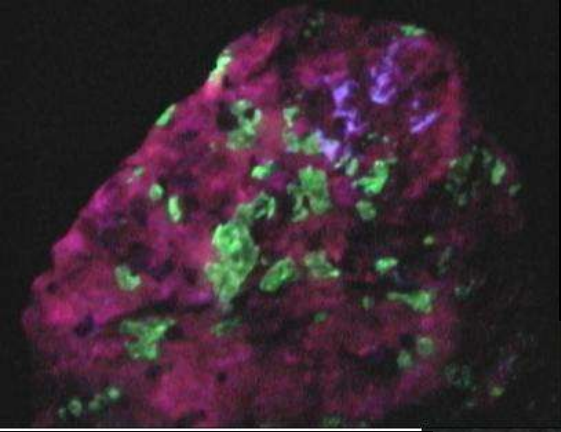


Fl-las-2

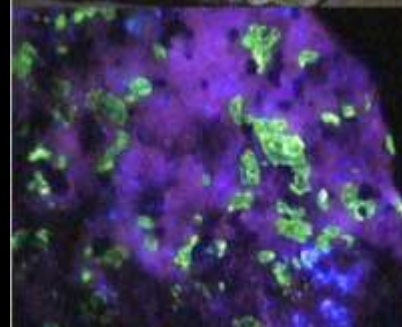
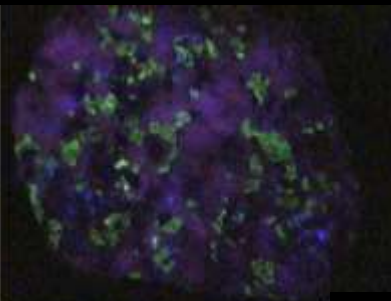
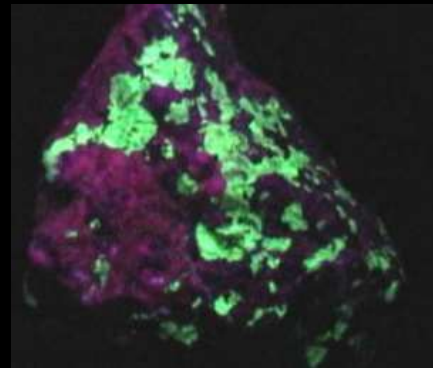


Diffraction grating spectra of 2 fluorescent materials irradiated by laser.

Fl-las-3

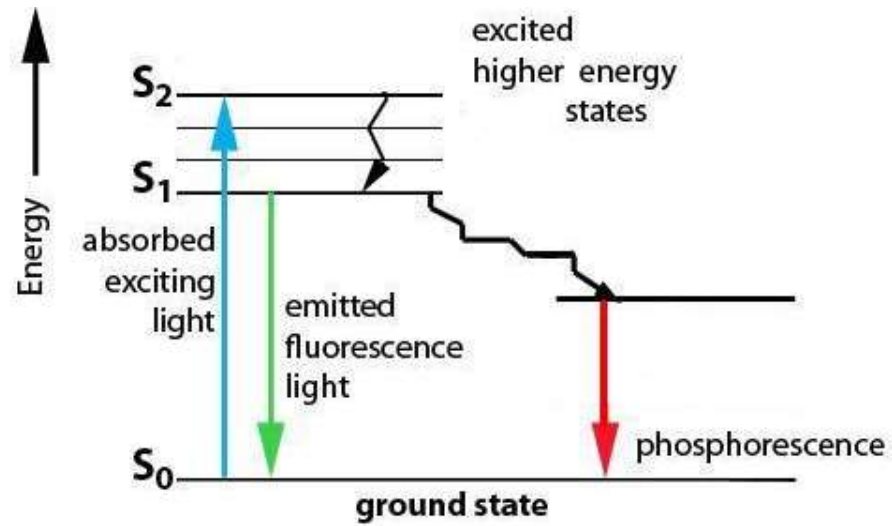


UV light  
Mineral  
Fluorescence



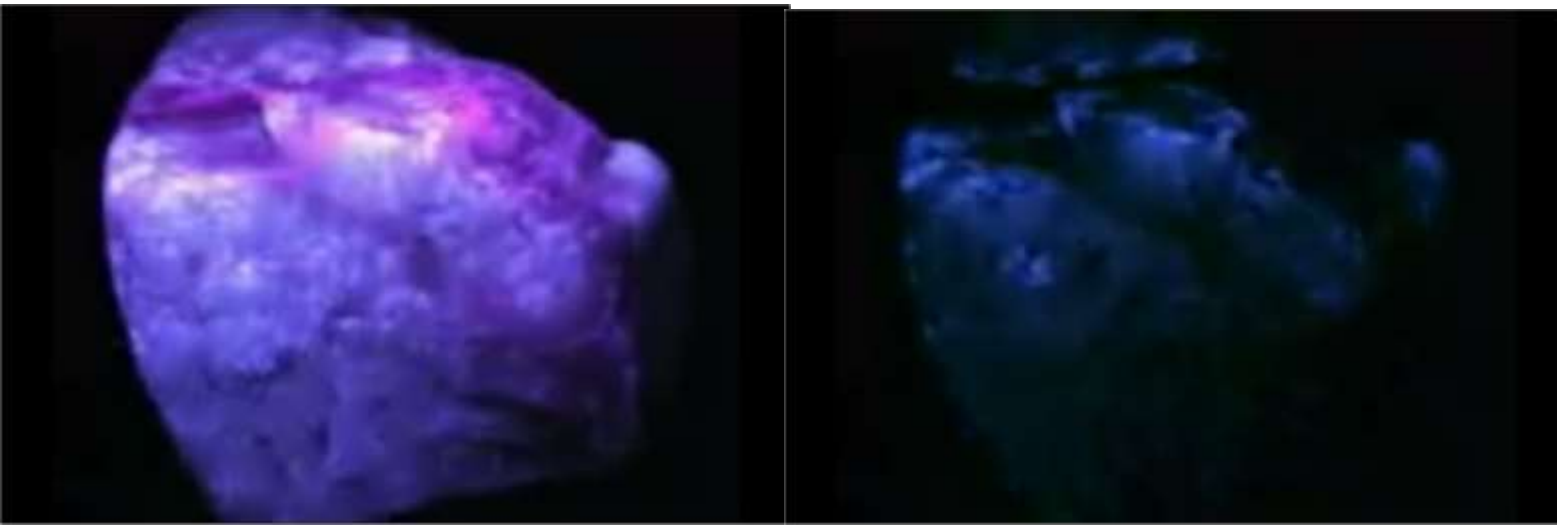
# Phosphorescence

Fl-las-4



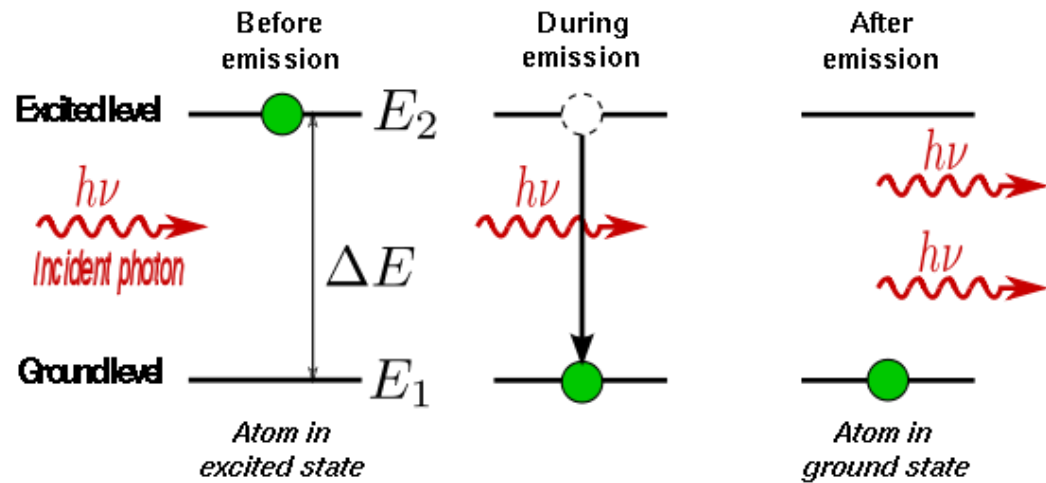
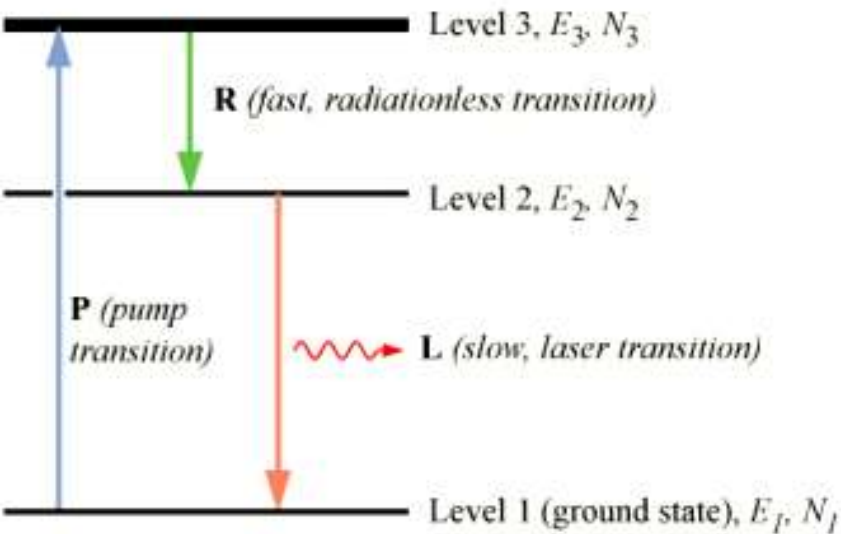
<http://micro.magnet.fsu.edu/primer/java/jablonski/lightandcolor/index.html>

<http://www.physics.rutgers.edu/~croft/flroc1.rm>



# Laser – light amplification by stimulated emission of radiation

## stimulated emission of radiation



$$E_2 - E_1 = \Delta E = h\nu$$

Absorption and Emission

Multiple Atoms (Lasing)

Lamp Control

Configure your atoms' electronic energy levels

Energy Levels

Options

Enable mirrors

Display photons emitted from upper energy state

Lamp View

Photons

Beam

Lower Transition

Photons

Wave view

Reset All

<http://phet.colorado.edu/en/simulation/lasers>